A NEW SPECIES OF *CHEILANTHES* (ADIANTACEAE) FROM NORTHEASTERN MEXICO

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ABSTRACT

Cheilanthes hintoniorum sp. nov. is described from Nuevo Leon, Mexico, where it is endemic and restricted to habitats of gypsum. Among other species of northern Mexico, it apparently is most similar to the more widespread *C. hirsuta*.

RESUMEN

Se describe una nueva especie endémica de helecho, ***Cheilanthes hintoniorum***, de Nuevo León, México, restringida a los habitats de sustrato gipsio. Dentro de las especies encontradas en el norte del país, la nueva especie se parece mas a *C. hirsuta*, un taxón de ambito geografico amplio.

KEY WORDS: *Cheilanthes*, Adiantaceae, Mexico

Cheilanthes hintoniorum Mendenhall & Nesom, sp. nov. (Fig. 1.)

Cheilanthi hirsutae Link similis sed statura parviore, squamis filiformibus rhizomate, laminis late deltatis pinnis infimis inaequilateris, pinnis non papillatis, segmentis ultimis penitus integris, et habitatione gypseo differt.

Rhizomes stout, compact, horizontal-ascending; rhizome scales purplish-black, 5 – 7 mm long, entire, filiform, 1 – 2 cells wide, 3 – 4 cells wide only at the base, rarely slightly flattened and never with differentiated margins. Fronds evergreen, not ceraceous, 8 – 17 cm long, arising in dense clumps, the sterile ones slightly smaller than the fertile; stipe 1/3 – 2/5 the frond length, glabrous, dark purplish-black, wiry, terete, not at all sulcate, the basal portion persistent from the rhizome; blades bipinnate to tripinnate, broadly deltate, 3 – 7 cm long, 3 – 8 cm wide at the base, length:width ratio 0.8 – 1.0:1, the pinnae oppposite to subopposite, lowest pinnae the largest, deltate and strongly inequilateral by the prolongation of the basiscopic pinnule on the lower side, the ultimate segments all completely entire, eglandular, stiffly linear, mostly 8 – 20 mm long, 1.0 – 1.5 mm wide, with upper and lower surfaces glabrous and smooth. Sori at vein ends; laminar margins entire, minutely glandular-papillate, recurved, strongly modified into false indusia 0.5 – 0.7 mm wide, evenly and very narrowly decurrent along pinnule and rachis axes; spores brown, 64 per sporangium, globose, 50 – 60 μm in diameter, trilete.

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South-central to southern Nuevo Leon (Fig. 1), crevices and shallow soil pockets in exposed gypsum, 1270 – 2000 m elevation.

TYPE: MEXICO. NUEVO LEON: Mpio. Galeana, 10 km NE of Pocitos, gypsum cliff over water, 1850 m, 26 Aug 1984, *Hinton et al. 18765* (HOLOTYPE: TEX!; ISOTYPES: MEXU!, NY!, UC!, to be distributed).

Additional collections examined: MEXICO. NUEVO LEÓN: Mpio. Dr. Arroyo, ca. 30 km ENE of Dr. Arroyo, W base of Cerro Peña Nevada, large area of exposed gypsum, 2000 m, 3 – 5 Aug 1981, *Nesom 4308* (TEX). Mpio. Galeana, Rincón San Antonio, ravine in gypsum hills, 1770 m, 18 Oct 1983, *Hinton et al. 18639* (TEX); Mpio. Zaragoza, below Puerto Piño [near saddle on N side of Peña Nevada complex], gypsum hillside, 1750 m, 2 Aug 1989, *Hinton et al. 19315* (TEX); Mpio. Rayones, Galeana to Rayones + 18 km, gypsum hillside, 1270 m, 27 Feb 1990, *Hinton et al. 20157* (TEX); Mpio. Aramberri, Aramberri to Lampazos, gypsum hillside of Iechuguilla and *Hechtia*, 965 m, *Hinton et al. 21042* (TEX).

Cheilanthes hintoniorum is named for the son and grandson of G. B. Hinton, Jaime and George, whose extensive and carefully made collections from Nuevo Leon and Coahuila in the last two decades have added immensely to our knowledge of that area's flora. All but one of the collections known of this new species have been made by the Hintons.

In its recurved laminar margins, strongly modified into false indusia (Fig. 1.A), *Cheilanthes hintoniorum* clearly is a member of *Cheilanthes* sensu stricto (see Mickel 1979). It is distinctive in its evenly hair-like, concolorous rhizome scales, glabrous, non-sulcate stipes, 2 – 3-pinnate fronds, broadly deltate blades with inequilateral lowest pinnae and completely glabrous, linear, strictly entire, ultimate segments, its narrowly but long-decurrent indusia, and its apparently obligately gypseous habitats.

In the keys of both Knobloch (1976) and Mickel and Beitel (1988), *Cheilanthes hintoniorum* runs to the vicinity of *C. membranacea* (Davenp.) Maxon and *C. marginata* Kunth. *Cheilanthes hirsuta* Link (= *C. pyramidalis* Fee) is closely associated with these in the latter key, and we have contrasted the new species with it in the diagnosis because it is relatively common and widespread, occurring from northeastern Mexico in Nuevo Leon to Sonora and Baja California south to Chiapas, Guatemala, and Costa Rica. *Cheilanthes hirsuta* is distinct from *C. hintoniorum* in its much broader rhizome scales, generally larger and differently shaped (ovate to narrowly deltate) blades, often pinnatifid ultimate segments, and glandular-papillate surfaces of the leaf margins and indusia. The new species also usually produces more strongly inequilateral lowest pinnae. *Cheilanthes hirsuta*, however, is a variable species and as pointed out to us by Dr. John Mickel (in the review), plants of that species may sometimes produce broadly deltate blades, linear and entire ultimate segments, and pinnae

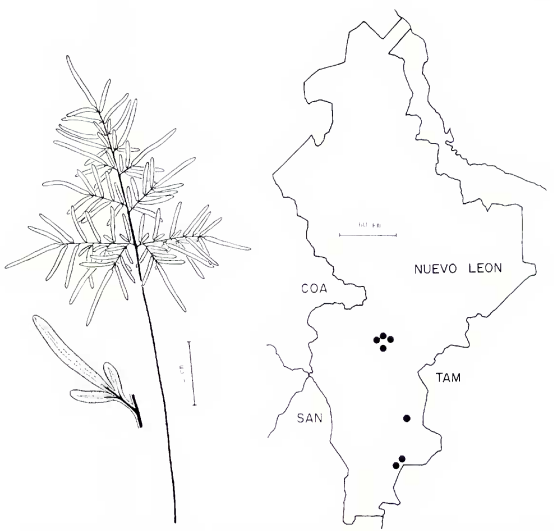

FIG. 1. Morphology and distribution of *Cheilanthes hintoniorum*. A. Frond and ultimate segment. B. Distribution. All collections from the Mexican state of Nuevo Leon; surrounding states as COA = Coahuila, SAN = San Luis Potosi, and TAM = Tamaulipas.

with the surface papillae indistinct or absent. The hair-like rhizome scales of *C. hintoniorum*, however, appear to be consistently different from those of *C. hirsuta*.

Cheilanthes marginata and *C. membranacea* are more similar to *C. hintoniorum* in their consistently deltate blades and glabrous leaf surfaces, but both of these species also produce broader rhizome scales and pinnatifid ultimate segments as well as fimbriate indusial margins and much larger blades, and both species occur primarily in the southern half of Mexico. *Cheilanthes marginata* is probably most closely related to *C. purpusii* T. Reeves of central Tamaulipas (Reeves 1982). Both of these produce small, evenly spaced glands along the lower margins of the ultimate segments, and the segment margins are distinctly crenulate. Further, except for *C.*

purpusii, none of the species putatively related to *C. hirsuta* grows on a substrate of gypsum, which is always the habitat of *C. hintoniorum*. In addition to the most recent collection (*Hinton 21042*) other localities almost certainly will be discovered for the new species in the numerous areas of exposed gypsum that lie between its two known primary loci of distribution (Fig. 1.B). We conclude that while it probably is most closely related to *C. hirsuta*, *C. hintoniorum* is a very distinct species, apparently somewhat isolated both in morphology and geography.

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REFERENCES

KNOBLOCH, I. W. 1976. Morphological characters in *Cheilanthes* together with a key to North and Central American species. Flora 165:507–522.

MICKEL, J. T. 1979. The fern genus *Cheilanthes* in continental United States. Phytologia 41:431–437.

——————— and J. M. Beitel. 1988. Pteridophyte flora of Oaxaca, Mexico. Mem. New York Bot. Gard. 46:100–123 [*Cheilanthes*].

REEVES, T. 1982. *Cheilanthes purpusii* (Adiantaceae), a new species from San Luis Potosi, Mexico. Rhodora 84:293–295.